

SYNONYMY OF *PRISTINELLA JENKINAE*  
(OLIGOCHAETA: NAIDIDAE)

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*Abstract.*—The naidid oligochaetes *Pristinella jenkiniae* (Stephenson, 1931), *P. idrensis* (Sperber, 1948), *Pristina taita* Stout, 1956, and *Pristina nothofagi* Stout, 1957, are considered to be synonymous based on overlapping characteristics. The high degree of variability both within a single specimen and among different specimens negates any justification for separating these four species.

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During a recent investigation into the effects of a pentachlorophenol spill on benthic invertebrates in Hyland Creek, Cloverdale, British Columbia, 11 specimens of a naidid oligochaete resembling both *Pristinella idrensis* (Sperber, 1948) and *P. jenkiniae* (Stephenson, 1931) were collected. Examination and comparison of these with specimens identified as *P. idrensis* from the United States by J. Hiltunen, and with specimens identified as *P. jenkiniae* from Africa by R. O. Brinkhurst and R. Grimm (pers. comm.) indicate that the variability and overlap of almost all chaetal characteristics makes it impossible to distinguish the two species. Furthermore, *Pristina taita* Stout, 1956, and *P. nothofagi* Stout, 1957, considered as possible synonyms of *P. idrensis* by Brinkhurst (1971), are also placed into synonymy with *P. jenkiniae*.

*Pristinella jenkiniae* (Stephenson, 1931)

Fig. 1

(?)*Naidium luteum* Schmidt.—Michaelsen, 1905:306.

*Naidium jenkiniae* Stephenson, 1931:39-41, fig. 1.

*Naidium jenkiniae* Stephenson.—Stephenson, 1932:327.

(?)*Pristina rosea* (Piguet).—Michaelsen and Boldt, 1932:596-597.—Kondo, 1936:386-387, pl. XXIV, fig. 16.

*Naidium roseum* Piguet.—Marcus, 1943:130-131, pl. XXV, fig. 105, pl. XXVI, fig. 106.

*Pristina jenkiniae* (Stephenson).—Sperber, 1948:224-225.—Brinkhurst 1971:396-397, fig. 7.23A, B.

*Pristina taita* Stout, 1956:99-101, figs. 2-5.

*Pristina nothofagi* Stout, 1957:289-292, figs. 1-6.

*Pristina idrensis* Sperber, 1948:220, fig. 23d-e, pl. XX, XXI, fig. 1.

*Holotype.*—*Typus ammissus* (Reynolds and Cook, 1976).

*Material examined.*—Kathman collection: 11 specimens, Hyland Creek, Cloverdale, British Columbia, coll. G. Derksen, 2 Nov 1984. Hiltunen collection: 1 specimen, Lake George Channel of St. Mary's River, Michigan, 17 Aug 1968; 1 specimen, Station 19 on Lake Huron, 29 Sep 1968; 1 specimen, Buckhorn Creek, a tributary of Cape Fear River, North Carolina, Apr 1974; 1 specimen, Cedar River, Kings County, Washington, coll. S. White. Brinkhurst collection: 9 specimens, Crocodile River, Republic of South Africa.

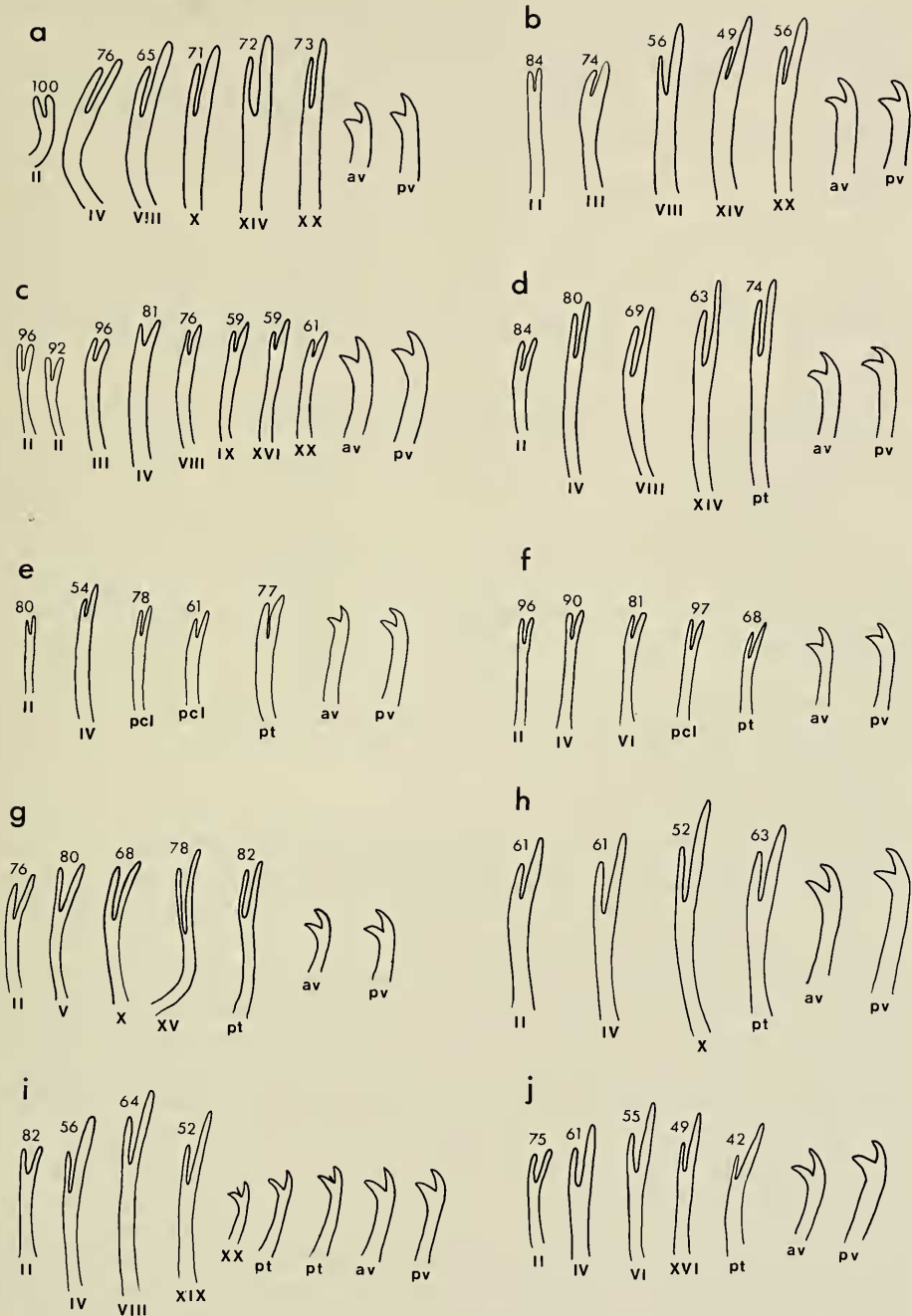


Fig. 1. Size and shape of ventral and needle chaetae of 10 specimens from Canada, U.S.A. and Africa. a-c, Hyland Creek, BC; d, Cedar River, WA; e, Lake Huron, MI; f, St. Mary's River, MI; g, Buckhorn Creek, NC; h-j, Crocodile River, S. Africa. Roman numeral = segment number; Arabic numeral = ratio of length of distal tooth to proximal tooth expressed as a percentage; av = anterior ventral; pcl = post clitellar; pt = posterior; pv = posterior ventral.

Table 1.—Characteristics derived from published descriptions of four species of *Pristina* and from new material of *Pristinella jenkinsae* from North America and Africa.

	<i>Pristina idrensis</i> <sup>a</sup>	<i>Pristina jenkinsae</i> <sup>a</sup>	<i>Pristina taita</i> <sup>b</sup>	<i>Pristina nothofagi</i> <sup>b</sup>
<b>Ventral chaetae</b>				
Number: anterior	3–7	2–7 <sup>c</sup>	2–7	2–6
posterior	?	2–3	2–3	?
Nodulus	D <sup>d</sup>	M-ant. D-post.	M	D
Length (μm)	32–45	50–55	30–64	30–40
Relative length of teeth	Equal	Equal	?	Equal
<b>Dorsal chaetae</b>				
Hairs: number	1–2	1	1 (2)	1
length (μm)	110–200	165–234	60–360	110–200
Needles: number	1–2	1	1 (2)	1
length (μm)	29–57	62–65	35–72	35–50
nodulus	D	D	?	None
length of teeth (μm):				
distal	3–3.7	≈ ½ proximal <sup>e</sup>	4–5	6 <sup>f</sup>
proximal	3.7–4.5	5–9	7–8	6
Stomach beginning	½VI–½VII	VII	VI–VII	VII
Total length (mm)	3–4	2.5–3	1.5–5	1
Number of segments	14–18	?	22–25	to 22
Number of specimens	26	0 <sup>g</sup>	?	?

<sup>a</sup> According to Sperber, 1948.

<sup>b</sup> According to Stout, 1956, 1957, respectively.

<sup>c</sup> According to Pop, 1973.

<sup>d</sup> D = distal; M = median.

<sup>e</sup> Actual length not available, although considered to be ≈ ½ as long as proximal.

<sup>f</sup> Described as “slightly larger.”

<sup>g</sup> Data from literature; no specimens personally examined by Sperber.

*Description.*—No proboscis. Dorsal bundles with 1, sometimes 2, non-serrated hair and 1, sometimes 2, needle chaetae, with distal nodulus, and distal tooth often thinner than, and from half as long to nearly as long as proximal, usually subequal in II; ventral chaetae 2–9 anteriorly (usually 4–6), 2–3 (rarely 4–5) posteriorly, nodulus slightly distal to distal, all teeth equally long; chaetal size variable (see Table 1); penial chaetae in VII; number of segments variable, to 28; length 1–4 mm; other characters as in the genus.

*Distribution.*—Cosmopolitan.

*Remarks.*—Although Sperber (1948) suggested that the *Pristina* species could be separated into groups based partly on the presence or absence of a proboscis, it was not until recently (Brinkhurst 1985) that the genus *Pristinella* was erected for those species without a distinct proboscis plus other associated characters.

Within this genus, the species *P. idrensis* is traditionally separable on the basis of differences in the size and shape of the chaetae. When the species was initially erected Sperber (1948) emphasized the “size and form” of the animal and the form of the stomach, septal glands and nephridia in separating *P. idrensis* from *P. amphibiotica*, although she admitted that *P. idrensis* might represent a sub-specific form or ecomorph of *P. amphibiotica*. Nowhere did she compare *P.*

Table 1.—Extended.

Hyland Creek, BC Canada	Cedar River, WA USA	Lake Huron, MI USA	St. Mary's River, MI USA	Buckhorn Creek, NC USA	Crocodile River, RSA Africa
4-9	6-7	6-7	5-6	4-5	2-5
2-3 (4)	3-4	5	3	2	2-3
D	D	D	D	D	D
39-60	46-54	27-36	35-39	36-44	36-52
Equal	Equal	Equal	Equal	Equal	Equal
1 (2)	1 (2)	1 (2)	1	1	1-2
40-325	95-318	130-143	88-125	113-163	55-218
1 (2)	1	1	1 (2)	1	1-2
31-68	40-65	31-39	33-41	30-41	39-55
D	D	D	D	D	D
1.9-6.3	3.1-6.2	1.5-3.6	2.5-3.0	3.8-6.9	2.8-5.7
1.9-8.7	3.7-9.4	2.0-4.7	2.8-4.1	5.0-8.8	3.4-10.9
?	?	?	?	?	?
1.1-2.3	1.8	1.5	1.3	1.4	1.6-4
(14?) 24-28	25	19	22	18	24-28
11	1	1	1	1	9

*idrensis* to *P. jenkiniae*, a species which appears to more closely resemble *P. idrensis* than does *P. amphibiotica* in terms of the chaetae. Any comparison between *P. idrensis* and *P. jenkiniae* must be limited largely to the chaetal characteristics as little else was covered in the original description, and the types are missing. In her account of *P. jenkiniae*, Sperber paid close attention to specimens of *P. jenkiniae* apparently misidentified as *P. rosea* Piguet but seems never to have considered the potential relationship with *P. idrensis*.

The characteristic used most often to distinguish *P. idrensis* from *P. jenkiniae* is the relative length of the distal to the proximal tooth in needle chaetae. Brinkhurst (1971:391) states that the needle teeth are long and parallel, with the distal tooth slightly longer than the proximal (Sperber says 80%) in *P. idrensis*, and that the needle teeth diverge with the distal about half the length (50%) of the proximal in *P. jenkiniae*. This wording was based on an examination of the original illustrations in both instances. His drawings (redrawn from the originals) show the distal tooth of each species to be approximately three-quarters (75%) as long as the proximal, but it is clear that the proximal tooth in *P. jenkiniae* has been accidentally shortened by the artist (confirmed by R. O. Brinkhurst, per. comm.).

Examination of chaetal characteristics of all my material shows a great deal of variability not only among specimens from the same or different geographic locations, but within single specimens in this set. This can be seen in Fig. 1, in which the needle teeth change in both total and relative lengths. The distal/proximal ratios, expressed as percentages, show that the lengths can vary as much

as 35 percentage points within a single individual, and as much as 51 percentage points among different worms. There is no consistent pattern to these changes, except that the chaetae of segment II are usually shorter than the others and have subequal teeth. Many investigators (for example, Barbour et al. 1980; Loden and Harman 1980; Smith 1985; Stout 1956) have shown that chaetae of a particular species vary with environmental conditions, among different geographic locations, and within single specimens. There is no reason, therefore, to believe that *P. jenkiniae* is unique among the group in showing the wide variations of chaetal size and shape. Indeed, two of the nine individuals examined from Africa showed an abrupt change from the long parallel needle teeth to short bifid or pectinate needles posteriorly (Fig. 1i). Other data presented in Table 1 provide further evidence for synonymizing these four species, as there appears to be some degree of overlap in every characteristic among the specimens and descriptions.

Stout (1956), in his description of *P. taita*, emphasized the variation in chaetal size for single worms and between worms several times, and even stated that his values for *P. taita* cover the range of six other species (including *P. idrensis* and *P. jenkiniae*). Despite this, he erected a new species partly based on the length of the hairs in segments VIII and IX. He defends erection of another species, *P. nothofagi*, a year later (Stout 1957) by stating that although it has the same chaetal characteristics as *P. jenkiniae* (and two others), it is much smaller. The data in Table 1 show that it otherwise fits well within the range of *P. taita* (which he does not discuss in his 1975 paper) as well as within the *P. idrensis*-*P. jenkiniae* limits.

Prior to synonymizing these four species the distributions were also highly unusual in this generally cosmopolitan family. *Pristinella idrensis* was common, but only in North America, Europe, and Asia (Israel), while *P. jenkiniae* was only found in South America, Africa, and Asia (Japan), and *P. taita* and *P. nothofagi* had only been reported once from New Zealand. As is typical of many species of *Pristina* and *Pristinella*, *P. jenkiniae* can now be considered cosmopolitan.

Sperber (1948) considered *P. idrensis* a possible synonym of *P. amphibiotica* and also showed historic confusion between *P. jenkiniae* and *P. rosea* (see synonymy listed above). Until specimens of *P. amphibiotica* and *P. rosea* can be examined, they will have to remain as valid species, although the chaetal characteristics, including the presence of penial chaetae, would suggest that either or both of these species could be considered as potentially synonymous with *P. jenkiniae*.

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#### Literature Cited

- Barbour, M., D. G. Cook, and R. S. Pomerantz. 1980. On the question of hybridization and variation in the oligochaete genus *Limnodrilus*, pp. 41-53. In Brinkhurst, R. O., and D. G. Cook, eds., Aquatic oligochaete biology.—Plenum Press, New York and London, ix + 529 pp.

- Brinkhurst, R. O. 1971. Part 2. Systematics. 7. Family Naididae, pp. 304–443. In Brinkhurst, R. O., and B. G. M. Jamieson, Aquatic Oligochaeta of the world.—Oliver and Boyd, Edinburgh, xi + 806 pp.
- . 1985. The generic and subfamilial classification of the Naididae (Annelida: Oligochaeta).—Proceedings of the Biological Society of Washington 98:466–471.
- Loden, M. S., and W. J. Harman. 1980. Ecophenotypic variation in setae of Naididae (Oligochaeta), pp. 33–39. In Brinkhurst, R. O., and D. G. Cook, eds., Aquatic oligochaete biology.—Plenum Press, New York and London, ix + 529 pp.
- Reynolds, J. W., and D. G. Cook. 1976. Nomenclatura oligochaetologica.—The University of New Brunswick, Fredericton, x + 217 pp.
- Smith, M. E. 1985. Setal morphology and its intraspecific variation in *Dero digitata* and *Dero nivea* (Oligochaeta: Naididae).—Transactions of the American Microscopical Society 104:45–51.
- Sperber, C. 1948. A taxonomical study of the Naididae.—Zoologiska Bidrag fran Uppsala 28:1–296.
- Stout, J. D. 1956. Aquatic oligochaetes occurring in forest litter. I.—Transactions of the Royal Society of New Zealand 84:97–102.
- . 1957. Aquatic oligochaetes occurring in forest litter. II.—Transactions of the Royal Society of New Zealand 85:289–299.

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